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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,789	02/01/2007	Hugh Charles Seton	ASTB-0055 / C974	2287

23377 7590 06/23/2011

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EXAMINER	
PETTITT, JOHN F	
ART UNIT	**PAPER NUMBER**
3744	

NOTIFICATION DATE	DELIVERY MODE
06/23/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficemonitor@woodcock.com

Office Action Summary	Application No.	Applicant(s)	
	10/589,789	SETON ET AL.	
	Examiner	Art Unit	
	JOHN PETTITT	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 June 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-6, 8, 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Seton et al. (WO 98/06972) published 19 Feb 1998. Seton teaches a liquefied gas cryostat (fig. 2) that houses a Superconducting Quantum Interference Device for MRI (p. 3) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use. Seton further teaches that the radiation shield (6) comprised a plurality of rods (page 6, lines 25-30) which are formed from a material which is thermally conducting and electrically insulating (material comprising: copper or aluminum wires and insulation covering) when the cryostat contains liquefied gas (page 6, lines 25-30). Further, Seton teaches that the radiation shield desirably is 2mm thick; that the shield comprises a glass reinforced plastic substrate on which the rods are positioned (page 6, line 30); that the shield comprises an end plate having a thickness of 2 mm (page 9, lines 28-29); that the shield (6) is cooled by being in contact with a

venting tube (8) of the cryostat via a heat exchanger (copper or Al strips; p. 7, line 35) for transferring heat from the shield (6) to the tube (8), as liquefied gas boils off.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the obvious modification of Seton.

Seton anticipates the limitations of claims 1, 4-6, 8, 9-14 as described above. Alternatively, the claimed invention of claims 1-14 is seen to be an obvious modification of the teachings of Seton using an alternate analysis. That is, Seton teaches a liquefied gas cryostat (fig. 2) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to

extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use; providing a radiation shield formed from sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide (page. 7, lines 24-30).

Seton does not explicitly teach that the radiation shield should be formed from a plurality of rods of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide. However, Seton does teach that the state of the art, at the time of the reference (1998), was to provide the shield in the form of electrically insulated strips or wires of copper or aluminum on a g.r.p tube (p. 6, lines 25-30). Therefore, this is seen as an explicit suggestion that providing the shield in the form of a plurality of rods provides advantages in forming the radiation shield, and so it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to form the radiation shield from a plurality of rods of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide on a g.r.p tube for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seton in view of Saho (US 2002/0024338).

Seton anticipates the limitations of claims 1, 4-6, 8, 9-14 as described above. Alternatively, the claimed invention of claims 1-14 is seen to be an obvious modification of the teachings of Seton using an alternate analysis. That is, Seton teaches a liquefied gas cryostat (fig. 2) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use; providing a radiation shield formed from sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide (page. 7, lines 24-30).

Seton does not explicitly teach that the radiation shield should be formed from a plurality of rods of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide. However, Seton does teach that the state of the art, at the time of the reference (1998), was to provide the shield in the form of electrically insulated strips or wires of copper or aluminum on a g.r.p tube (p. 6, lines 25-30). Therefore, this is seen as an explicit suggestion that providing the shield in the form of a plurality of rods provides advantages in forming the radiation shield. In addition it is noted that Saho teaches that radiation shields for SQUID cryostats are advantageously formed from a plurality of rods (see figures 5-6, 8-10) on an electrically insulating substrate (parag. 29, 30, 31, 35). It is further noted that Saho teaches that providing the shield with strips improves the flexibility and fabrication easiness (parag.

35). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to form the radiation shield from a plurality of rods of sintered ceramic material, or sapphire, or diamond powder composite, alumina, aluminum nitride, or silicon carbide on a g.r.p tube for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seton in view of Seifert (US 5065582).

Seton anticipates the limitations of claims 1, 4-6, 8, 9-14 as described above. Alternatively, the claimed invention of claims 1-14 is seen to be an obvious modification of the teachings of Seton using an alternate analysis. That is, Seton teaches a liquefied gas cryostat (fig. 2) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use; providing a radiation shield formed from sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide (page. 7, lines 24-30).

Seton does not explicitly teach that the radiation shield should be formed from a plurality of rods of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide. However, Seton does teach that the state of the art, at the time of the reference (1998), was to provide the shield in the form of electrically insulated strips or wires of copper or aluminum on a g.r.p tube (p. 6, lines 25-30). Therefore, this is seen as an explicit suggestion that providing the shield in the form of a plurality of rods provides advantages in forming the radiation shield.

In addition it is noted that Seifert teaches that SQUID cryostats are advantageously formed from a plurality of rods (see figures 2-3, column 4, lines 45-67; column 5, lines 10-55). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to form the radiation shield from a plurality of rods of sintered ceramic material, or sapphire, or diamond powder composite, alumina, aluminum nitride, or silicon carbide on a g.r.p tube for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes.

Response to Arguments

Applicant's arguments filed 06/06/2011 have been fully considered but they are not persuasive.

1. Applicant's arguments (page 4, ¶ 3) are that the recitation requires that the shield be formed from a material that is thermally conductive and electrically insulating.

In response, it is noted that Seton teaches such a thermal shield which is formed of a material which comprises copper or aluminum and an electrically insulating coating. It is further noted that there is nothing to limit how the material that forms the rods is thermally conductive and electrically insulating, only that it is "formed from a material which is thermally conductive and electrically insulating". A material is interpreted as an amount of matter. Many materials are made of several components. Therefore, since a material may have a variety of components, it is clear that the material may comprise copper wires with insulation and thereby by thermally conductive and electrically insulating. Therefore, the allegation that the recitation overcomes the teachings of Seton is unpersuasive.

2. Applicant's arguments (page 4, ¶ 4) are that the strips disclosed by Seton cannot be electrically insulating. In response, it is noted that the entire strips including the insulation are being identified as the rods and therefore the argument fails to address the grounds of rejection, which shows rods that are formed of a material (coper and insulation) that is thermally conductive and electrically insulating.

3. Applicant's arguments (page 5, ¶ 3) are that one of ordinary skill in the art would see no advantage in making the shield from strips or rods. In response, it is noted that the rejection provides several reasons why those of ordinary skill in the art would provide the shield formed from rods of sintered ceramic material, or sapphire, or diamond powder composite, alumina, aluminum nitride, or silicon carbide. It is noted that the applicant has failed to address these grounds.

4. Applicant's arguments (page 5, ¶ 4) are that those of ordinary skill in the art would not assume that a shield formed of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide would have to take the same form as the metal wires of Seton. In response, it is noted that the examiner agrees that one of ordinary skill would not determine that the shield would **have to** take the same form, as the examiner is not arguing that such a formation is mandatory; but rather is arguing that such a formation is obvious for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes. It is further noted that the fact that Seton suggests the shield be made from rods further shows that those of ordinary skill would find it obvious to form the shield from rods since such is merely the task of substitution of one material for another which is better suited for the task. Therefore the argument that those of ordinary skill would have no suggestion is unpersuasive.

5. Applicant's arguments (page 6, ¶ 1) are an allegation that only the applicant is aware that diamond and sapphire, etc are expensive materials. In response, it is noted that his is simply not true. It is known fact that these materials are expensive. Therefore an argument that the prior art must explicitly state this fact is seen to ignore the knowledge that those of ordinary skill in the art have.

6. Applicant's arguments (page 6, ¶ 2) are that forming the shield of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride,

or silicon carbide would solve the problem of eddy currents and that relative to this problem there would be no need for forming the shield of rods. In response, it is noted that while it is agreed that the prior art shows that the problem may be solved by forming the shield of a continuous cylinder of sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide. It is further concluded that the prior art shows that the problem is also solved by forming the shield of a plurality of rods thereby providing the further advantages had and suggested by the prior art copper wires and g.r.p tube.

7. Applicant's arguments (page 6, ¶ 3) are that with regard to metals that forming a radiation shield in a continuous cylinder or as rods would be no easier or cheaper. In response, it is noted that the allegation is not relevant to the rejection as the rods of material of the rejection are formed from expensive materials and therefore the allegation is unpersuasive.

8. Applicant's arguments (page 7, ¶ 3) are that Seifert and Saho do not teach that the rods are formed of the expensive materials sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide. In response, it is noted that the grounds of rejection acknowledge this fact, however, these references still show how it is well known to provide the shield formed of a plurality of rods.

9. Applicant's arguments (page 7, ¶ 4) are that the applicant recognizes the benefits of providing the shield as a plurality of metal rods but does not consider there to be any benefit to providing the expensive materials as rods since they will not produce

eddy currents. In response, it is noted that providing the shield formed of rods provides further benefits beyond eddy currents. Especially in view of the expense of the materials; which is common knowledge. Therefore, it would have been obvious to form the radiation shield from a plurality of rods of sintered ceramic material, or sapphire, or diamond powder composite, alumina, aluminum nitride, or silicon carbide on a g.r.p tube for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes.

Conclusion

All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Dufrane (US 4914306) teaches providing a shielding element for nuclear radiating materials which is formed of a plurality of rods to reduce the weight and cost of the shield (column 6, lines 1-5).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/CHERYL J. TYLER/
Supervisory Patent Examiner, Art Unit 3744

JFP III
June 15, 2011